

### **ABSTRACT OF THE DISCLOSURE**

The present invention provides a filter device and a transmission power control apparatus capable of outputting transmission power in the form of apparent loop gain commensurate with the present communication circumstances while maintaining settings provided as loop gain under transmission power control. The filter device comprises an integrator for integrating control information supplied thereto over a period up to being reset, and outputting an integrated value, a direction determining circuit to which a first threshold value for determining an increasing direction and a second threshold value for determining a decreasing direction are set in advance, and which compares these set threshold values and the integrated value respectively and outputs direction information indicative of a coincident control direction of these results of comparison, and an information generator for generating new control information in accordance with the supplied direction information. The transmission power control apparatus comprises a receiver for receiving a signal sent from a device to be controlled, an information arithmetic unit for generating information indicative of a characteristic of the received signal by computation on the basis of the received signal, a comparator for comparing the information obtained by the computation and a predetermined convergent value and outputting a

difference obtained by the comparison, a control information converter for converting the difference into control information on transmission power for the controlled device, an information control filter for integrating the control information supplied from the control information converter over a period up to the supply of a reset signal, comparing the integrated value and predetermined threshold values set in advance in an increasing direction and a decreasing direction respectively, and outputting control information controlled in a direction corresponding to the coincident threshold value according to the coincidence of comparisons between the integrated value and the predetermined threshold values, and the reset signal, a multiplexer for incorporating the control information into a transmit signal, and a transmitter for transmitting the transmit signal to the controlled device.